



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,207	03/30/2001	Partha P. Tirumalai	SUN-P5446	6083
25920	7590	08/25/2005	EXAMINER	
MARTINE PENILLA & GENCARELLA, LLP 710 LAKEWAY DRIVE SUITE 200 SUNNYVALE, CA 94085			WOOD, WILLIAM H	
			ART UNIT	PAPER NUMBER
			2193	

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/823,207	Applicant(s) TIRUMALAI ET AL.	
	Examiner William H. Wood	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,11-13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,11-13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1, 3-9, 11-13, 15-20 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 31 May 2005 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 3-9, 11-13, 15-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New limitation "a different rule of instruction scheduling" (entered into the claims in amendment of 20 September 2004) not found in originally filed disclosure. Appropriate correction required.

4. Claim 1, 3-9, 11-13, 15-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. New limitation "a different rule of instruction scheduling" (entered into the claims in amendment of 20 September 2004) not enabled by the originally filed disclosure. Appropriate correction required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-6 and 8-20 are rejected under 35 U.S.C. 102(b) as being anticipated by **Aho** et al., "Compilers: Principles, Techniques, and Tools".

Claim 1

Aho disclosed a method of simultaneously optimizing at least two target machines (page 14-15, section "Code Optimization"; further page 20, section "Front and Back Ends", *simultaneously is a matter of perspective, further the front end does optimization for both targets as well*), comprising the steps of:

Art Unit: 2193

- ♦ abstracting a rule of instruction scheduling for each of said at least two target machines (*page 463*);
- ♦ generating a hypothetical machine based on said rule of instruction scheduling for each of said at least two target machines (*page 12, first paragraph under section “Intermediate Code Generation”*); and
- ♦ targeting said hypothetical machine (*page 463, item 2.*).

Further, **Aho** disclosed the method of claim 1 wherein a rule of different instruction scheduling for said hypothetical machine is a restrictive set of said rule of instruction scheduling for each of said at least two target machines (*page 20, section “Front and Back Ends”, second paragraph; page 463, the necessary set of rules to target the machines*).

Claim 3

Aho disclosed the method of claim 1 further including the steps of:

detecting a conflict between said rule of instruction scheduling for each of said at least two target machines; and resolving said conflict (*page 20, second paragraph; conflicts being when the compiler must choose to follow actual rules for the actual target machine after the optimizing intermediate code step*)

Art Unit: 2193

Claim 4

Aho disclosed the method of claim 3 wherein said step of resolving said conflict includes a step of selecting a less damaging option for said detected conflict (*page 20, second paragraph; “less damaging” is choosing the rules for the actual machine being targeted*).

Claim 5

Aho disclosed the method of claim 3 wherein said detected conflict corresponds to an inherent conflict between said rule of instruction scheduling for each of said at least two target machines (*page 20, second paragraph; “less damaging” is choosing the rules for the actual machine being targeted verses a machine not currently being targeted*).

Claim 6

Aho disclosed the method of claim 1 further including the steps of:
modeling each of said at least two target machines (*page 12, “abstract machine”; page 20, target machine info in backend; and page 463, targeting several machines; some model therefore necessary of the several machines in order to target them*); and
retrieving scheduling information corresponding to each of said at least two target machines (*page 463, item number 1.; scheduling information is required for targeting machines*).

Art Unit: 2193

Claims 8-20

The limitations of claims 8-20 correspond to the limitations of claims 1-6 and as such are rejected in the same manner.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aho** et al., "Compilers: Principles, Techniques, and Tools" in view of "UltraSPARC-III: Designing Third-Generation 64-Bit Performance" (herein referred to as **III**) and SunMicrosystems press release of May 1998 (herein referred to as **II**), both in support of prior taken Official Notice as prescribed in MPEP 2144.03.

Claim 7

Aho did not explicitly state the method of claim 1 wherein said at least two target machines include an UltraSPARC-II configured to operate at a speed of 360 MHz and an UltraSPARC-III configured to operate at a speed of 600 MHz. Official Notice is taken that it was known at the time of invention to make use of UltraSPARC-II and III processors configured at varying MHz ranges within their capabilities (please note, **II** teaching a UltraSPARC II processor configured to 360 MHz, and **III** teaching a

Art Unit: 2193

UltraSPARC III processor configured to 600 MHz). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the compiler system of **Aho** with UltraSPARC-II and III processors as known in the prior art. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a retargeting compiler (cuts down on development time and cost; also **Aho** page 463) for known machine architectures (varying architectures require compiling and optimizing of code).

Response to Arguments

9. Applicant's arguments filed 31 May 2005 have been fully considered but they are not persuasive. Applicant argues **Aho** fails to provide any disclosure of targeting at least two target machines. Upon analysis of the cited reference, Applicant's arguments are found unpersuasive. On page 20 in the section titled "Front and Back Ends" several phrases to support the conclusion are found: "These normally include ... the generation of intermediate code"; "A certain amount of code optimization can be done by the front end as well"; and "It has become fairly routine to take the front end of a compiler and redo its associated back end to produce a compiler for the same source language on a different machine". Further Applicant is encouraged to refer to page 463, bulleted items 1 and 2. These passages sum up to a hypothetical or abstract machine (evidenced by the intermediate representation) being constructed, which is used for producing code for multiple target machines. Furthermore, optimization occurs for the intermediate representation and thus simultaneously for the multiple target machines. The reference

Art Unit: 2193

is clear and unmistakable. As the above addresses all of Applicant's raised issues, the rejections are maintained as indicated in the above sections of this Office Action.

Correspondence Information

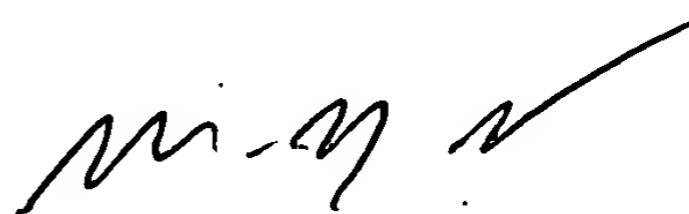
Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (571)273-8300 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.



William H. Wood
August 18, 2005



WEI Y. ZHEN
PRIMARY EXAMINER